and a second electrical contact layer are arranged at the rear side lying opposite the radiation exit side. The first and the second electrical contact layer are electrically insulated from one another by a separating layer.

[0019] It is not absolutely necessary for the entire first and/of second electrical contact layer to be arranged at the rear side. Rather, a partial region of the first contact layer extends from the rear side through a perforation in the active layer in the direction toward the radiation exit side. The separating layer is arranged between the first contact layer and the second contact layer, wherein preferably the first contact layer and the second contact layer overlap laterally in a plan view of the semiconductor body.

[0020] Advantageously, the radiation exit side of the semiconductor body is free of electrical connection locations such as bonding pads, for example. The risk of shading and/or absorption of part of the radiation emitted by the active layer during operation by the electrical connection locations is minimized in this way.

[0021] Furthermore, it is advantageously possible to dispense with complicated method steps in conjunction with the production of such connection locations arranged on the/radiation exit side, and/or measures which restrict or prevent the current injection into regions of the semiconductor body below the electrical connection location. By way of example, preferably polishing of the front-side surface of the semiconductor body and/or production of metal webs for current spreading which have a large thickness but a small lateral extent are/is not absolutely necessary. Furthermore, it is advantageously possible to dispense with, for example, the formation of an electrically insulating layer, a Schottky barrier and/or an ion-implanted region below the connection location.

[0022] Preferably, the second contact layer is structured in the form of pixels, wherein at least one part of the predefined image arises as a result of the projection of the pixels during the operation of the projection device.

[0023] Preferably, the completely predefined image arises as a result of the projection of the pixels. The second contact layer can be damaged in places, corresponding to the pixels, such that damaged regions do not conduct, current or hardly conduct current any longer. Regions of the second contact layer which are damaged do not or hardly energize the active layer. In this way, only selected regions of the active layer are luminous. These selected regions of the active layer which generate light are responsible for the formation of the predefined image. In this case, the structuring of the second contact layer can be effected by removal in places, ion implantation or diffusion of dopants into the second contact layer in places.

[0024] Preferably, the pixels are arranged in a two-dimensional segment display. Preferably, the pixels are arranged in a two-dimensional seven-segment display.

[0025] In particular, in this way only regions of the radiation exit side of the semiconductor body below which a pixel with the second contact layer is arranged in a vertical direction contribute to the emission of radiation. Only selected regions of the active layer which are arranged vertically above the second contact layer, in particular the pixels of the second contact layer, are luminous in this case.

[0026] Further preferably, the pixels are arranged in a two-dimensional regular matrix composed of n rows and m columns.

[0027] Further preferably, the second contact layer has at least one structure in the form of a pictogram, character, letter or lettering. Preferably, the second contact layer has a plurality of structures in each case in the form of a pictogram, character, letter or lettering.

[0028] In particular, each structure of the second contact layer is an already complete pictogram or character The projection of a plurality of characters, character strings and/or letterings is advantageously made possible in this way.

[0029] Preferably, the semiconductor body is structured to form a pattern, wherein at least one part of the predefined image arises as a result of the projection of the pattern during the operation of the projection device.

[0030] Particularly preferably, the complete predefined image arises as a result of the projection of the pattern.

[0031] The structuring of the semiconductor body to form a pattern can be effected by an etching method, for example, wherein the pattern to be produced is defined by a lithographic method. By way of example, for this purpose the semiconductor body can be completely removed in places. However, it is also possible for only parts of the semiconductor body, such as current-conducting layers, for example, to be removed. Overall, the pattern to be represented as an image arises through the regions of the radiation exit side of the semiconductor body which emit light during operation after the completion of the semiconductor body, in particular after the structuring of the semiconductor body has been effected.

[0032] If, by way of example, a luminous star is intended to be represented as an image by the optoelectronic projection device, then the semiconductor body can be completely removed apart from a star-shaped region. The star-shaped region is then luminous during the operation of the semiconductor body. In this case, the semiconductor body is the imaging element, wherein the pattern is formed by the star. In particular, an organic light-emitting diode (OLED) structured to form a pattern can be employed in this case.

[0033] The generation of light is thus advantageously concentrated on the selectively luminous regions of the semiconductor body.

[0034] Preferably, a reflective material is arranged in the removed regions of the semiconductor body. Examples of appropriate reflective materials include metals, for example Ag, or materials having a low refractive index, for example SiO_2. As a result, radiation emitted from the selectively luminous regions of the semiconductor body in the direction of the respective adjacent selectively luminous regions of the semiconductor body can be reflected at the reflective materials in the direction of the radiation exit side and can be coupled out there. In particular, the efficiency of the projection device is advantageously improved in this way.

[0035] In addition, optical crosstalk between the individual selectively luminous regions of the semiconductor body can advantageously be prevented. Optical crosstalk should be understood to mean, in particular, the emission of radiation from a selectively luminous region of the semiconductor body into an adjacent switched-off selectively luminous region. The consequence of optical crosstalk is a reduced contrast of the projection device. The reflective material thus advantageously improves the contrast of the projection device and also the efficiency of the projection device.

[0036] Preferably, the first contact layer is arranged at that side of the second contact layer which is remote from the semiconductor body. Particularly preferably, the second con-